

*Sub*  
*g1*

1. An exposure apparatus, comprising:

an illumination optical system for illuminating an original with an F<sub>2</sub> excimer laser;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing an inside space, which accommodates optical components of at least one of said illumination optical system and said projection optical system, with a dry gas;

a hygrometer, disposed in the inside space, for measuring conditions in the inside space and for producing an output; and

a controller for controlling said gas purging means on the basis of the output of said hygrometer.

*g2*

*2*  
*4* An apparatus according to Claim 1, wherein the dry gas consists of one of N<sub>2</sub> gas, He gas and dry air.

*3*  
*5* An apparatus according to Claim 1, further comprising passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means.

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An exposure apparatus, comprising:

an illumination optical system for illuminating an original with ultraviolet light;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing an inside space, which contains optical components of at least one of said illumination optical system and said projection optical system, with a particular gas, said optical components comprising at least one lens;

passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means; and

a support for supporting said at least one lens,

wherein said passage means comprises an aperture formed in said support, and

wherein a straight line connecting apertures of a pair of adjacent supports of said passage means is not parallel to a plane defined by an optical axis of a lens which is one of the optical components and a straight line connecting apertures of another pair of adjacent supports.

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7.(Amended) An apparatus according to Claim 6, wherein the particular gas consists of an inert gas.

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~~9.~~

An exposure apparatus comprising:

an illumination optical system for illuminating an original with ultraviolet light;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing an inside space, which contains optical components of at least one of said illumination optical system and said projection optical system, with a particular gas, said optical components comprising at least one lens;

passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means, wherein said passage means comprises a notch provided on said at least one lens.

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~~11.~~

An apparatus according to Claim ~~1~~ or ~~6~~, further comprising a path defined within the space for allowing gas to flow from a gas inlet to a gas outlet, for assisting in gas purging by said gas purging means.

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~~12.~~

An apparatus according to Claim ~~6~~, further comprising a light source that includes an F<sub>2</sub> excimer laser.

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14.

An exposure apparatus, comprising:

an illumination optical system for illuminating an original;

a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

gas purging means for replacing, with a particular gas, an inside space which contains optical components of at least one of said illumination optical system and said projection optical system, said optical components comprising at least one lens; and

a plurality of passage means, mutually communicating spaces separated by said optical components, for assisting in gas purging by said gas purging means,

wherein a straight line connecting an adjacent pair of said plurality of passage means provided in a same casing for gas purging, is not parallel to an optical axis of said at least one lens and a straight line connecting another pair of said plurality of passage means, which is one of the optical components.

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15.

A device manufacturing method, comprising:

illuminating an original with an  $F_2$  excimer laser using an illumination optical system;

projecting, using a projection optical system, a pattern of the original onto a substrate to be exposed to manufacture a device;

replacing, using gas purging means, an inside space, which accommodates optical components of at least one of the illumination optical system and the projection optical system, with a dry gas;

measuring, using a hygrometer disposed in the inside space, conditions in the inside space and producing an output; and

controlling the dry gas replacement using the gas purging means, on the basis of the output of the hygrometer.

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A device manufacturing method, comprising:

illuminating an original with ultraviolet light using an illumination optical system;

projecting, using a projection optical system, a pattern of the original onto a substrate to be exposed to manufacture a device;

replacing, using gas purging means, an inside space, which contains optical components of at least one of the illumination optical system and the projection optical system, with a particular gas, the optical components comprising at least one lens;

mutually communicating, using passage means, spaces separated by the optical components, for assisting in gas purging by the gas purging means; and

supporting the at least one lens using a support,

wherein the passage means comprises an aperture formed in the support and,

wherein a straight line connecting apertures of a pair of adjacent supports of said passage means is not parallel to a plane defined by an optical axis of a lens which is one of the optical components and a straight line connecting apertures of another pair of adjacent supports.

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17.

A device manufacturing method, comprising:

illuminating an original with ultraviolet light using an illumination optical system;

projecting, using an illumination optical system, a pattern of the original onto a substrate to be exposed to manufacture a device;

replacing, using gas purging means, an inside space, which contains optical components of at least one of the illumination optical system and the projection optical system, with a particular gas, the optical components comprising at least one lens;

mutually communicating, using passage means, spaces separated by the optical components, for assisting in gas purging by the gas purging means, the passage means including a notch provided on the at least one lens.

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A device manufacturing method, comprising:

illuminating an original using an illumination optical system;

projecting, using a projection optical system, a pattern of the original onto a substrate to be exposed to manufacture a device;

replacing with a particular gas, using gas purging means, an inside space which contains optical components of at least one of the illumination optical system and the projection optical system, the optical components comprising at least one lens; and

mutually communicating, using a plurality of passage means, spaces separated by the optical components, for assisting in gas purging by the gas purging means,

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wherein a straight line connecting an adjacent pair of said plurality of passage means provided in a same casing for gas purging, is not parallel to a plane defined by an optical axis of said at least one lens and a straight line connecting another adjacent pair of said plurality of passage means.

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Please ADD claims 19-24 as follows:

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~~19.~~ <sup>14</sup> An apparatus according to Claim ~~8~~ <sup>7</sup>, wherein the particular gas consists of an inert gas.

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~~20.~~ <sup>15</sup> An apparatus according to Claim ~~14~~ <sup>9</sup>, wherein the particular gas consists of an inert gas.

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~~21.~~ <sup>16</sup> A method according to Claim ~~15~~ <sup>10</sup>, wherein the dry gas consists of one of N<sub>2</sub> gas, He gas and dry air.

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~~22.~~ <sup>17</sup> A method according to Claim ~~16~~ <sup>11</sup>, wherein the particular gas consists of an inert gas.

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~~23.~~ <sup>18</sup> A method according to Claim ~~17~~ <sup>12</sup>, wherein the particular gas consists of an inert gas.